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by

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ABSTRACT: Recently, planning theorists have stressed the need to understand more fully the realities of planning, fueled by the fact that the planning community has little empirical knowledge about its effects. There currently exist very few studies which attempt to quantitatively assess the broader socioeconomic corollaries of planning activity. The purpose of this paper is to demonstrate one approach to understanding these corollaries by attempting to link planning activity (the "input") with various community or countrywide characteristics (the "output"). The paper uses exploratory data analysis to investigate the relationship between planning expenditure, as a measure of planning activity, and a variety of socioeconomic and other variables which can, in some way, be related to planning activity. While these relationships do not prove anything about cause and effect, they are a useful first step in attempting to decipher the ultimate effects of planning. Using planning expenditure data for Florida cities and counties, it was found that at the city level planning expenditure was associated with low densities and low average travel to work times. At the county level, it was found that mid-size, mid-density, fast-growing counties exhibited strong positive correlations between planning expenditure and housing value, rent, and multiple-family housing. Unlike at the city level, low-density housing was not positively correlated with county level planning expenditure.

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Is More Planning Better?

An Exploration of Planning Expenditure in Florida

Recently, planning theorists have stressed the need to understand more fully the realities of planning practice (Stiftel, 1995; Bryson, 1991; Yiftachel, 1989; Healy, 1986). This call is fueled by the fact that the planning community has little empirical knowledge about the effects of planning practice, leaving planners to theorize about rather than firmly grasp the consequences of their actions. Fundamental questions about the effects of planning are largely unanswered. This creates a paradox in which planning is condemned as having failed miserably (Bryson, 1991), while at the same time advocated as "the principal means by which the human community can confidently sustain itself on this planet" (Niebanck, 1988, pg. 433).

This paper speaks to the questions: how do we ever actually know what the effect of planning activity is, and can we investigate these effects quantitatively? Quantified analysis does not readily apply itself to cause and effect relations, but it is an effective way to fine-tune research questions and develop hypotheses. It is, as yet, an untapped method which can be used to meet the call to better understand the actualities of planning, a call which has not yet been translated into an active research agenda. Bryson recently stated that what the planning profession needs most are "rigorous, empirical, large-sample, quantitative support for the proposition that planning and planners make a positive difference in the world" (1991; see also Healy 1986). As a starting point, planners should investigate any associations that can be made between different intensities of planning activity and the characteristics of the communities that are being "planned".

The purpose of this paper is to demonstrate a quantitative, exploratory approach to understanding the realities of planning by attempting to link planning activity (the "input") with various community or countywide characteristics (the "output"). Whereas planning activity is generally studied either conceptually or at the micro level (e.g., studies of planners), little

research has attempted to explore the potential effects of planning through macro analysis - that is, at the level of communities, counties or regions (see Hawkins et. al., 1975). Studies of planning practice are almost completely devoid of knowledge about the implementation or effect of planning activity or practice (Talen, 1996). Overall, there currently exist very few studies which attempt to assess - quantitatively - the broader socioeconomic corollaries of planning activity.

Planning scholars have stressed the need for more planning, and specifically, more funding for planning (see Abu-Lughod, 1991; Fainstein and Fainstein, 1987; Crenson, 1983), but there has been scant research on the association between "more" planning and "better" communities. Ideally, this would entail an investigation of any possible links between improved or improving cities and the type, quality or quantity of planning activity being performed. This paper is a starting point: it attempts to link "more" planning with a variety of community or county characteristics. Researchers have, in fact, investigated the impact of growth control strategies on fiscal and economic health, but there are few analyses of the link between planning activity in general and the larger, broader characteristics of areas.

Assessing the Effect of Planning: Current Methods

As a generalized notion, trying to determine what the effect, impact or consequence of planning activity is embodies a variety of applications and methodologies (for a more complete review, see Talen, 1996). One line of research which seeks to measure policy effects (which often entail planning-related policies) is policy implementation analysis. Meyerson and Banfield's analysis of public housing (1955) and Pressman and Wildavsky's famous study of job creation in Oakland, CA (1973) are examples in which planning-related policies were studied for their effect. Usually, such analyses focuses on the administrative process involved, and why that process may or may not have gone awry (Hogwood and Gunn 1984; Goggin et al. 1990; Younis 1990; Mazmanian and Sabatie 1983). For planning, attempts to measure the effects of policies on people (or areas) has been mostly treated in a single-faceted, non-comprehensive way (Sawicki and Flynn 1996).

Analyses of the effects of planning often focus on the implementing mechanisms (e.g., land use controls), specific regulations (e.g., minimum density requirements), and government programs administered through planning departments (e.g., ride-share programs). In studies such as those by Dowall (1984), for example, land use regulations are studied for their effect on housing costs, market readjustments, and spillovers. Other studies have looked into the effectiveness of land use zoning in controlling development (Natoli 1971; Booth 1989; McMillen and McDonald 1990; Landis 1992). Growth management ordinances have been investigated in terms of their spatial impact (Babcock 1980) and their impact on the real estate market (Pogodzinki and Sass 1991).

Case study accounts of planning practice may entail an evaluation of the impacts of plans more generally. In works such as those by Roeseler (1982) and Smith (1991), the research objective is to identify planning's impact on shaping communities, to assess whether those impacts have been positive or negative, and to understand what factors account for greater planning success. Studies of the effects of planning in times of crises (Alterman 1995), or in response to local disasters (Kartez and Lindell 1987) have shown that planning does, indeed, have an effect on the short-term fate of communities and regions.

Sometimes the effects of planning "inputs" on planning "outputs" are the focus of the evaluation of planning activity. In these studies, planning output, the dependent variable, is measured as the number of technical studies, plans and/or regulations produced, and researchers attempt to identify the explanatory significance of variables such as type of planning agency, community environment, planning need, or resource capacity (Hawkins et. al. 1975; Krueckeberg 1972). The ability of city leaders to exert influence over the structure of development policies has been investigated (Elkins 1995), and increased regional planning activity has been shown to be positively correlated with a locality's ability to generate federal grants (Hawkins and Stein 1977).

Quantitative approaches to the assessment of planning effect are few in number. One reason for this may be an internal resistance in the planning community to the notion of quantifica-

tion in attempting to place value on the work of planners. A quantitative study of planning activity by Bryson, Bromiley and Jung (1990) was criticized as being unnecessary (explaining the obvious), seeking to downplay the importance of qualitative studies, and for failing in its methodology on statistical grounds (Briassoulis 1991). More generally, quantitative analysis is continually challenged for its tendency to yield to mindless empiricism, its acceptance of narrow methodologies, and its incapacity to shed light on the realities of implementation (Fox 1990). But even if the validity of a quantitatively-based evaluation of planning is accepted, such analyses are stymied by the inherent difficulty of obtaining appropriate data (Healy, 1986). Some observers have labeled the dearth of planning data which would better equip researchers to perform evaluations of planning an "obdurate refusal" on the part of planning to consider their own practice and record its activity in a form suitable for external review (Breheny and Hooper 1985, pg. 1).

Theories About the Effects of Planning

If it were possible to assess the effects of planning, what would those effects be? In this section I delineate the theorized effects of planning, divided into two broad categories. While much simplified, categorizing the effects of planning in this way is useful for interpreting the results of the empirical analysis of planning activity.

Hypothesis 1: Planning addresses social and environmental concerns

For many, the lure of planning is that, theoretically at least, it is a countervailing force to the needs of capitalism and serves to protect the poor and the environment from the rich and powerful (Domhoff, 1978). Promotion of planning is seen as the primary vehicle through which environmentally friendly and socially responsible development can be accomplished. Needless to say, this traditional focus of planning is not always looked upon favorably, as planners may be seen as interfering with the "proper" working of the market (Simmie 1993).

The theorized effects of planning, therefore, can be summarized as follows. Planners

operating in the traditional norm will tend to abhor urban sprawl, the domination of the automobile, and other "wasteful" land use practices; in fact, lack of planning may be seen as one of the prime reasons why social and environmental evils like urban sprawl exist (Schultz and Kasen 1984). To combat sprawl, planners will promote compact urban development in the form of increased housing densities. Affordable housing is also a key goal, and may be promoted by requiring developers to provide low-income housing in exchange for density bonuses. Open space and agricultural lands are to be preserved as much as possible, and alternative means of transportation should be emphasized. This is the mainstream of planning ideology, advocated most recently by Downs (1994) and Bourne (1992), and in line with the promotion of "sustainable communities" (Beatley, 1995). Of course, while these precepts remain the conventional wisdom of many planners, the optimal form of urban development is currently the subject of a widespread debate, mostly in terms of deciding the optimal relationship between land use and transport (see recent review by Teitz, 1996).

Hypothesis 2: Planning promotes the interests of the wealthy

To many, planning's ensconcement in capitalist ideology is unquestionable (Harvey, 1989; Foglesong, 1986), and as a result, planners neglect the needs of the poor and concomitantly advance the interests of the wealthy (Jacobs, 1961; Goodman, 1971; McConnell, 1981; Fainstein and Fainstein, 1983). According to Friedmann, planning's support of the ruling elite has always been in evidence in planning practice, "from Auguste Comte to Rexford Tugwell". (1987, pg 8).

The favoring of wealthy interests is, according to theorists, influenced by real estate economists who see planning as the catalyst for achieving high land values and therefore increased tax revenues (Gans 1968). Property owners and city officials, the argument goes, will generate higher profits from land planned for highly valued, low-density residential districts, and this is reflected in the bias in comprehensive planning toward single-family, low-density housing developments and the services they warrant. This kind of low-density sprawl is the "dominant vision" condemned recently by Anthony Downs (1994). It leads to what Bourne calls the "self-

fulfilling prophesy" of government (e.g., public sector planning) in which suburban dispersion is accelerated, juxtaposed with "environmental deterioration, population decline, and a reduced quality of life in the inner cities and older suburbs" (1992, pg. 511). But planning's role in the procurement of the dominant vision is complicated by the fact that growth management aimed at containing residential and commercial development, while consistent with some aspects of the mainstream planning view discussed above, tends to produce higher land values and therefore residential development which is exclusionary (Logan and Molotch 1987). The idea is that planners favor the minimization of future growth, except for affluent residential districts or "high-status" commercial and industrial land uses (Gans, 1968). In this way planners contribute to class and racial stratification within new, typically suburban, residential areas (Hayden 1984).

Data and Methodology

The complexity of the city development process precludes the establishment of a direct, causal link between planning activity and urban outcomes. What *can* be assessed, however, is whether or not certain variables which characterize communities or counties vary in relation to some measure of planning activity. The specific method used in this paper is to explore the relationship between planning expenditure, as a measure of planning activity, and a variety of socio-economic and other variables which can, in some way, be related to planning activity. The goal is to discover linkages between variables. While these relationships do not prove anything about cause and effect, they are a useful first step in attempting to decipher the ultimate effects of planning.

Planning expenditure in Florida

The geographic focus of this analysis is the state of Florida. Planning expenditure data was obtained from the State of Florida Department of Banking and Finance for Florida cities greater than 10,000 population (in 1980) and for all Florida counties for two years - 1980 and 1985 (State of Florida 1980 and 1985). In Florida's local government accounting system, municipalities

and counties are required to record their planning expenditures under section 515.00, "comprehensive planning", defined as "The cost of providing master planning, zoning and development" (State of Florida 1994, chapter 4, page 3). The expenditures were averaged over these two years on a per capita basis, as well as on the basis of the percentage of total government expenditure spent on planning. The expenditure data for Florida counties is inclusive of municipal expenditure (i.e., it includes county government expenditure as well as the expenditures of municipalities within that county).

Admittedly, data on planning expenditure is a crude measure of planning activity. The chief limitation is that it does not account for types of planning activity performed by a particular community, nor does it speak to qualitative differences. However, the case can be made that the amount of funding a community allocates for planning is directly correlated with the intensity or degree of planning activity performed; put simply, the community or county that spends more on planning, most likely *does* more planning. Planning expenditure reflects the degree of local planning "culture", in the sense that what a community allocates for planning signifies the value that the community places on planning as an activity, vis-a-vis other activities or uses in competition for public funds. Of course, the planning that is being done may take a variety of forms, ranging from the preparation of long-range comprehensive plans to implementation of zoning regulations.

By using funds committed to planning activity the question of need or capacity for planning (measured in terms of population growth or persons per square mile) has already been translated into actual desire or willingness to plan. The use of expenditure data is also useful given the fact that the specific types of planning practice or qualitative aspects of planning are not easily defined (Verma, 1995). Planning tends to be a multifaceted, complex array of techniques, planmaking procedures, and various other implementation strategies which are in any case difficult to quantify.

Since the early 1970's, Florida has been at the forefront of planning, particularly in the areas of water and growth management policies (see DeGrove 1992 for a review). Florida has

experienced explosive growth in the last half of this century, prompting the passage in 1972 of a variety of planning-related laws aimed at ensuring more and better planning through development control and protection of natural resources (Diamond and Noonan 1996). This was followed in 1985 by the enactment of a collection of land use planning and growth management laws under the Omnibus Growth Management Act. This act established the principles of promoting compact development and ensuring that services be in line with new development in a concurrent fashion (i.e., "pay as you go" development). Although the adoption of local plans was required by legislation passed in 1975, it was only in 1985 that the "teeth and funding" to enforce land use planning was provided (Diamond and Noonan 1996). Thus the planning expenditure variables used in this paper (1980 and 1985 levels) characterize the level of planning effort enacted when planning was required but not necessarily enforced.

Florida's urban growth pattern is characterized by heavy coastline development, small downtowns, and dispersed, low-density suburban development strongly reliant on the automobile (Audirac, Shemyen and Smith 1990). The planning legislation of the 1970s and 1980s sought to encourage higher densities, compact, contiguous urban form, more public transit, and protection of open space, development policies which do not necessarily reflect the preferences of most Floridians (see Audirac, Shemyen and Smith 1990). These policies do, however, reflect the conventional view of what the desired effects of planning should be (hypothesis 1 above).

The dependent variables

Three data sets, listed in table 1, were analyzed to explore the relationship between planning expenditure and community/county characteristics: cities with a population greater than 10,000 in 1980 (118 cities); cities with a population greater than 25,000 in 1980 (60 cities); and all 67 Florida counties. The location of the cities and counties used in the analysis is shown in figure 1. The figure reveals that most cities are located along Florida's coastline, or across the mid section of the state.

For all data sets, average planning expenditure (per capita or percent of total expendi-

ture), based on data from 1980 and 1985, is used as the *explanatory* variable, while the other variables listed, mostly 1990 variables, are used as dependent variables. The focus of this exploratory analysis, then, is on the degree to which planning expenditure in the early 1980's predicts certain characteristics at the municipal or county level in 1990. The dependent variables were selected on the basis of their link to the "realm" of planning activity, or their logical ability, theoretically, to be predicted by planning expenditure. Specifically, the variables in all three datasets are related to size (e.g., population, units, land area), density (e.g., acres per capita), growth (e.g., unit change between 1980 and 1990), housing value or rent, services such as water, sewer and hospitals, travel behavior, and local government taxes and expenditures. All of these variables have at least the potential to be correlated with, or predicted by, planning activity.

One limitation of the data which should be noted is that many of the dependent variables intended to measure physical, land planning characteristics of communities do not reflect the spatial arrangement of land uses; for example, the use of net densities of dwelling units does not reflect the spatial arrangement of densities at the inter-urban level. In the case of Florida, the linkage between planning expenditure and the compact urban development promoted by the state's growth management initiatives is only indirectly investigated using the variables included here.

Exploratory Data Analysis

The purpose of this analysis is not to characterize "who" is doing the most planning (which would make planning expenditure the dependent variable), but rather to correlate planning expenditure—the "input"—to community or countywide characteristics—the "output". To explore this relationship, I utilize choropleth mapping, correlation analysis, and some of the techniques of exploratory data analysis (EDA). EDA is a method for statistical analysis which is based on a desire to "let the data speak for themselves". Using graphic representations of data, EDA techniques impose as little prior structure as possible in the analysis of variables (Tukey, 1977). Visualization of data allows the structure of the data to be uncovered even when that

structure is quite complicated (Becker, Cleveland and Shyu, 1996). What is learned from "looking" at the data is guided by knowledge of the subject being studied (Cleveland, 1993). Creative data displays, such as scatterplot matrices and trellis displays (used in this paper), are powerful tools for eliciting patterns in the data, suggesting relationships between variables, and understanding interactions in the data which may not be "seen" in standard regression analysis.

Results

The analysis begins by determining where the expenditures on planning have been highest. Since the county dataset consists of expenditure by county government together with expenditures for all cities included within each county, it is useful to focus on county expenditure patterns for this aspect of the analysis. Figure 2 shows counties with high and low expenditures, based on the median statistic of both planning expenditure statistics: per capita and percent of total expenditure. As figure 2 shows, counties which spent less than 0.5 percent on planning, or less than $2.00 per capita in 1980 and 1985 (on average) are mostly in the interior or northern parts of Florida. Generally, higher expenditures are seen in the coastal regions, and in the southern half of Florida. This differentiation generally holds whether expenditure is measured on a per capita basis or as a percentage of total government expenditure.

The relationship between planning expenditure, as an explanatory variable, and a number of predicted variables can be approached by first examining the correlation coefficients of paired variables. The correlation statistics for all three data sets are listed in table 2. The table presents a number of interesting relationships. First, for the data set which includes all cities (n=118), none of the correlation coefficients show any strength with respect to planning expenditure. Population, characteristics of housing, travel behavior, density (acres per capita) - none of these 1990 characteristics appear to be linked to planning expenditure which occurred in the early 1980's.

Of the 118 cities included in the first dataset, nearly one-half are cities with a population of less than 25,000 in 1980. A different set of observations emerge when this large proportion of

smaller cities are excluded from the analysis. Correlation statistics for the second dataset, which consists of only 60 cities, show that several variables can be linked to planning expenditure. The statistics seem to point to a possible correlation between higher planning expenditure and lower residential densities. This premise is based on the observation that percentage single family housing units are positively correlated with expenditure levels, while population per square mile, percentage of condominium units, and percentage of units in structures of 5 units or more are negatively correlated. Further, average travel time to work is negatively correlated with planning expenditure. The correlated communities do not appear to be stagnant, however, as both population change and unit change between 1980 and 1990 are positively correlated with planning expenditure. Hospital facilities are also positively correlated. In sum, planning expenditure appears to be linked to communities with lower residential densities and lower travel times, higher rates of hospital facilities, and which are at the same time experiencing some degree of growth.

The correlation coefficients for counties are listed in the last two columns of table 2. Again, population does not appear to be correlated with planning expenditure. However, a majority of the variables show a strong relationship with planning expenditure, either for per capita expenditure or percent of total expenditure. In particular, population and unit change, housing value, rent, percent sewer and water, and multiple-family housing all show positive, strong relationships with planning expenditure. Percent mobile homes and percent single-family dwellings show a strong negative relationship. Variables related to traditional transportation planning goals, such as carpooling and public transportation, are ambiguous - the use of public transportation is positively correlated (with per capita expenditure), but the percentages of workers who carpool is negatively correlated with planning expenditure.

Comparing these results to the results for the two city data sets, it is possible to conclude that when a larger geographic region is analyzed (i.e.,at the county level), wealth (i.e., higher housing value) is not necessarily associated with lower density housing. At the county level, unlike at the city level, planning expenditure is positively correlated with higher densities (more

multiple-family housing, fewer single-family dwellings and mobile homes) and higher housing value and rent. When only cities are compared, low densities, exclusive of the non-urbanized portions of counties, may in fact characterize wealth. All of these qualities appear to point to a pattern in which planning expenditure, inclusive of both county and municipal spending, is associated with wealthier, faster growing counties with, relatively speaking, higher density housing.

It is useful to visually investigate the strength of the linear association between the expenditure data and the dependent variables. The relationships can be graphically represented using a scatterplot matrix, where the slopes of the regression lines give an indication of whether or not the associations are linear. This exploratory method is useful for determining how variables are related, including whether or not there are any clusters of points or outliers.

Figure 3 is a scatterplot matrix of some of the variables which had particularly strong correlation statistics in table 2. Reviewing the top row of the scatterplot matrix shows the linear association between per capita expenditure (EXPPC) and the selected variables: percent public sewer, percent multiple-family housing, percentage mobile homes, and housing value. The slopes of the regression lines are all in the predicted directions. Percentage of public sewer use, multiple-family housing and housing value are all positively associated with planning expenditure, whereas percentage mobile homes is not (the scatterplot matrix also shows a strong negative linear association between multiple-family housing and mobile homes). The linearity of the housing value/expenditure scatterplot, as reflected by the high correlation coefficient of .606 (for per capita expenditure) is particularly strong. Note that there is one outlier which can be seen at the top of each matrix: the point represents Glades County in the Florida Everglades region, an undeveloped area with an unusually high amount of planning expenditure.

It is enlightening to investigate the spatial dimensions of variables which were strongly correlated with planning expenditure. Figure 4 shows the quartile distributions at the county level for four variables, percent public sewer, percent mobile homes, percent multi-family housing, and median housing value. As the maps clearly show, coastal, mostly southern counties had

a higher percentage of multiple-family housing and public sewer use, as well as higher median housing values. The interior and panhandle regions are more rural (having higher percentages of mobile homes and lower percentages of public sewers) and less wealthy (lower median housing values). Overall, then, there appears to be a link between planning expenditure and county wealth (indicated by housing value) and density.

Planning expenditure under the conditions of size, growth and density

As indicated, the dependent variables used thus far were selected on the basis of whether or not they could theoretically be tied to, that is, predicted by, planning expenditure. The analysis can be extended to include several variables which have less direct ties to planning expenditure, but which are instead useful for differentiating counties on the basis of their size, growth rate, or density. In exploratory data analysis, these variables are known as condition variables, and they are presented used trellis display (MathSoft 1995; Becker, Cleveland and Shyu 1996). Trellis display is a framework for the visualization of data which is used to better understand interactions in which a response (e.g., housing value) depends on an explanatory variable (i.e., planning expenditure). It can be viewed as an exploratory analogue of analysis of variance, using the condition variables as controls. While none of the condition variables (size, growth rate, density) had a particularly strong correlation with planning expenditure, they are used here to further investigate the relationship between the variables which did have strong correlations. The analysis using condition variables and trellis display is based on county-level variables.

The three condition variables applied to the county data were: 1980 population, population per square mile in 1980, and percentage population growth between 1980 and 1990. Figure 5 shows the geographic pattern of these variables, classified by quartile distribution. The maps of 1980 population and population per square mile are remarkably similar. The southern coastal regions, the westernmost region of the panhandle, and the central, interior regions of Florida had the highest population and population per square mile in 1980. Population growth patterns are slightly different: the southern tip of Florida was not the fastest growing region, but the more

central sections along both the Gulf and Atlantic coasts were fast growing. Predictably, the central panhandle had the lowest size, density and, to a less extent, growth rate.

Figure 6 presents an exploratory analysis under the size condition. Here the scatterplot matrices between housing value and expenditure, and between rent and expenditure, are divided on the quartile distribution of the condition variable *1980 population*. In each panel, the dependence of housing value (top of figure) or rent (bottom of figure) on planning expenditure is shown, conditional on population size. Both of these graphs indicate that the strong linear relationship between expenditure and value does not hold well for the largest or smallest counties. Clearly, it is the mid-sized counties, particularly those in the third quartile (population range from approximately 50,000 to 150,000) that have the strongest linear association between planning expenditure in 1980 and 1985, and 1990 housing value and rent.

Figure 7 uses a density condition variable, population per square mile in 1980, to investigate the relationship between expenditure and housing value and between expenditure and multiple-family housing. For both variables, counties which are the most dense or the least dense do not exhibit the same dependent relationship as those counties in the mid-density range. For multiple-family housing in particular, the 3rd quartile density range (61.1 to 172.2 persons per square mile) shows the strongest linearity with planning expenditure.

Finally, figure 8 uses population growth (percent population change between 1980 and 1990) to "condition" the relationship between planning expenditure and housing value and multiple-family housing. Interestingly, it is the fastest growing cities, those in the third and fourth quartiles, which show the strongest linearity between planning expenditure and either of the dependent variables.

In sum, counties which were mid-sized and in the mid density range in 1980, but which were the fastest growing counties between 1980 and 1990, had the strongest relationship between planning expenditure and housing value, rent, and multiple-family housing. When this information is compared with figure 5, counties in the central east coast and the northern interior regions emerge: for those counties, the data suggests that the linkage between planning expendi-

ture and housing value may be more significant than for other counties. An interesting hypothesis suggested by this is that planning expenditure in areas with the largest, densest populations does not predict higher housing values, while in fast growing regions of more moderate size it does. Planning expenditure is not a unilateral predictor of high housing value - the relationship is undoubtedly more complex.

Summary and Conclusions

In the type of exploratory analysis presented here, it is important to avoid making overdrawn conclusions, particularly since strong statistical relationships between variables do not imply a causality. Despite the time lags between the input (1980/1985) and output (1990) variables, some of the characteristics could "cause" the planning expenditure levels observed, or each could be part cause, part effect of the other. Studies of associations between variables is a useful first step in the broader investigation of possible cause and effect relations.

The focus of this paper has been on gauging the explanatory effect of planning (proxied by planning expenditure data), on a variety of variables which could, theoretically, be planning dependent. The efforts of planners to guide future development is manifested in a wide variety of actions, ranging from the preparation of long range comprehensive plans to specific implementation mechanisms (e.g., zoning) or the enactment of ordinances related to a single issue (e.g., transportation management). An underlying premise of this analysis is that these plans, controls or ordinances are intended to have an effect on (and thus can be linked to) housing, services, or travel behavior, but may also have indirect or unintended effects on population size, housing value or rent, and taxes.

The first overall conclusion to be made is that the results were markedly different depending on the geographic unit used. For cities with a population greater than 10,000, none of the variables used to characterize various planning-related aspects of cities were significantly related to planning expenditure. Incidently, the fact that population size at either the municipal or county level did not appear to be linked to planning expenditure is consistent with two previ-

ous studies which showed a weak relationship between population and planning employment or planning output (Beauregard 1985; Hawkins et. al. 1975).

When small cities were removed from the analysis, it appeared that planning expenditure was associated with communities with low densities and travel times, with good services (in terms of hospitals per capita), which were at the same time growing during the 1980s in terms of population and housing units. While it may seem inconsistent to associate planning expenditure with both low density and low travel time, the empirical conclusions about density and travel remain ambiguous (Handy, 1992; see discussion in Bourne, 1992). Overall, it is tempting to draw at least a preliminary conclusion that planning expenditure in Florida during the 1980's was associated with fairly desirable characteristics in 1990.

The relationship between planning expenditure and characteristics at the county level produced different results, a phenomenon which supports what regional planners have long advocated - that planning problems and therefore planning links to community variables are beyond the limits of municipalities. Beyond this, the relationship between planning expenditure and county characteristics pointed to a preliminary conclusion that mid-size, mid-density, fast-growing counties had the strongest relationship between planning expenditure and housing value, rent, and multiple-family housing. Interestingly, unlike at the city level, low-density housing was not positively correlated with planning expenditure.

In terms of the two hypotheses presented earlier in this paper, the results did not align with one hypothesis or the other, but instead were somewhat mixed. While the expenditure for larger cities (population > 25,000) was correlated with low densities, these densities were not necessarily indicative of wealth (e.g., the correlation with value and rent was not particularly strong). The results of the analysis of county-level data appear to support hypothesis 2 - that planners seek to advance the interests of the wealthy. However, the fact that increased densities in the form of multiple-family housing were also positively related to planning expenditure would seem to support a more favorable view of planning, at least in the traditional sense of what planning is supposed to strive for (e.g., higher-density housing). These relationships are in

no way definitive, but they do offer some interesting avenues for future research activity: Do mid-sized cities "benefit" more from planning than large or small cities do? Is the relationship between planning expenditure and higher housing values and rents a regional as opposed to a municipal phenomenon? Does "more" planning tend to result in more multiple-family housing units being constructed, and, if so, how does this affect housing value and rent?

Exploratory data analysis is most useful when no clear theory about the relationship between or among variables exists. In the case of attempting to discover the consequences of planning, there are competing hypotheses, and therefore a more inductive approach using modern graphical methods is particularly useful. It is hoped that future research will continue the exploration of the relationship between planning and the characteristics of places, perhaps using alternative measures of planning input (e.g., measures of planning quality or productivity) as well as planning output (e.g., neighborhood or community indicators). The quantitative, exploratory approach used in this paper is intended to be a useful supplement to more qualitative forms of the analysis of planning activity and its effects.

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Table 1: Description of Variables

Variable:	Description:	All cities (n=118)	Larger cities (n=60)	Counties (n=67)
EXP%	Expenditure on comprehensive planning as a percentage of total expenditure, average of 1980 and 1985	x	x	x
EXPPC	Expenditure on comprehensive planning per capita, average of 1980 and 1985			x
POP	Population, 1990	x		
LAND	Land area, 1990		x	
ACREPC	City size, in acres, per capita (1990 population)	x		
POPSQ	Population per square mile, 1992		x	
POPCH%	Percent population change, 1980 and 1990 (counties) or 1980 to 1992 (larger cities)		x	x
POPSQCH	Change in population per square mile, 1980 to 1990			x
UNITCH%	Housing units, percent change 1980 to 1990		x	x
UNITS	Total housing units, 1990	x	x	
RENT%	Percent renter occupied housing units (1990 housing units)	x		
SFD%	Percent housing units which are singe-family detached	x	x	x
SFALL%	Percent housing units which are single-family (detached or attached)	x	x	x
MULTI%	Percent of housing units with 2 or more units in structure	x		x
UNIT5%	Percent housing units in a structure with 5 or more units, 1990		x	
CONDO%	Percent condominium (occupied housing units), 1990		x	
MOBL%	Percent mobile home or trailer, 1990			x
VALUE	Median housing value (owner-occupied housing units)	x	x	x
RENTRT	Median gross rent (renter-occupied housing units)	x	x	x
VALCH%	Percent change in median housing value, 1980 to 1990 (owner-occupied housing units)		x	
WATER%	Percent housing units using public system or private company for water (not individual well)	x		x
SEWER%	Percent housing units using public sewer (not septic tank)	x		x
CAR%	Percent of workers 16 years and over who drive alone to work	x	x	x
CARPL%	Percent of workers 16 years and over who carpool	x	x	x
NOCAR%	Percent of workers 16 years and over who used means other than car to get to work	x		

Table 1: Description of Variables (Continued)

Variable:	Description:	All cities (n=118)	Larger cities (n=60)	Counties (n=67)
CARCH%	Workers driving alone to work, percent change 1980 to 1990			x
CARPLCH%	Workers carpooling to work, percent change 1980 to 1990			x
TRAVPC	Travel time to work (in minutes), per capita (workers 16 yrs and over)	x		
TRTIME	Average travel time to work, 1990		x	x
PUBTR%	Percent of workers 16 years and over using public transportation, 1990		x	x
REVPC	City government general revenue per capita, 1990-1991		x	
TAXPC	City government taxes per capita, 1990-1991		x	
TAXPR	City government taxes per capita, percent property tax, 1990-1991		x	
HOSP	Community hospital beds per 100,000 population, 1991		x	x

Table 2: Correlation statistics

	Planning expenditure			
	All cities	Larger cities	Counties	
Variable:	EXP%	EXP%	EXP%	EXPPC
POP	.028	.085	.014	.075
LAND		-.090		
ACREPC	-.008			
POPSQ		-.233		
POPCH%		.237	.383	.282
POPSQCH			.364	.264
UNITCH%		.218	.368	.255
UNITS	.034	-.148		
RENT%	.045			
SFD%	-.006	.269	-.169	-.302
SFALL%	-.009	.205	-.096	-.212
MULTI%	.028		.369	.472
UNIT5%		-.248		
CONDO%		-.308		
MOBL%			-.292	-.322
VALUE	-.048	-.164	.570	.606
RENTRT	.045	-.099	.572	.602
VALCH%		.113		
WATER%	-.069		.491	.561
SEWER%	-.055		.350	.406
CAR%	-.030	.061	.111	.043
CARPL%	-.004	.051	-.232	-.241
NOCAR%	.041			
CARCH%			.009	-.070
CARPLCH%			-.090	-.029
TRAVPC	.022			
TRTIME		-.243	-.077	-.207
PUBTR%		-.189	.090	.220
REVPC		.079		
TAXPC		-.152		
TAXPR		-.091		
HOSP		.289	.013	.069

Figure 1: Florida cities and counties

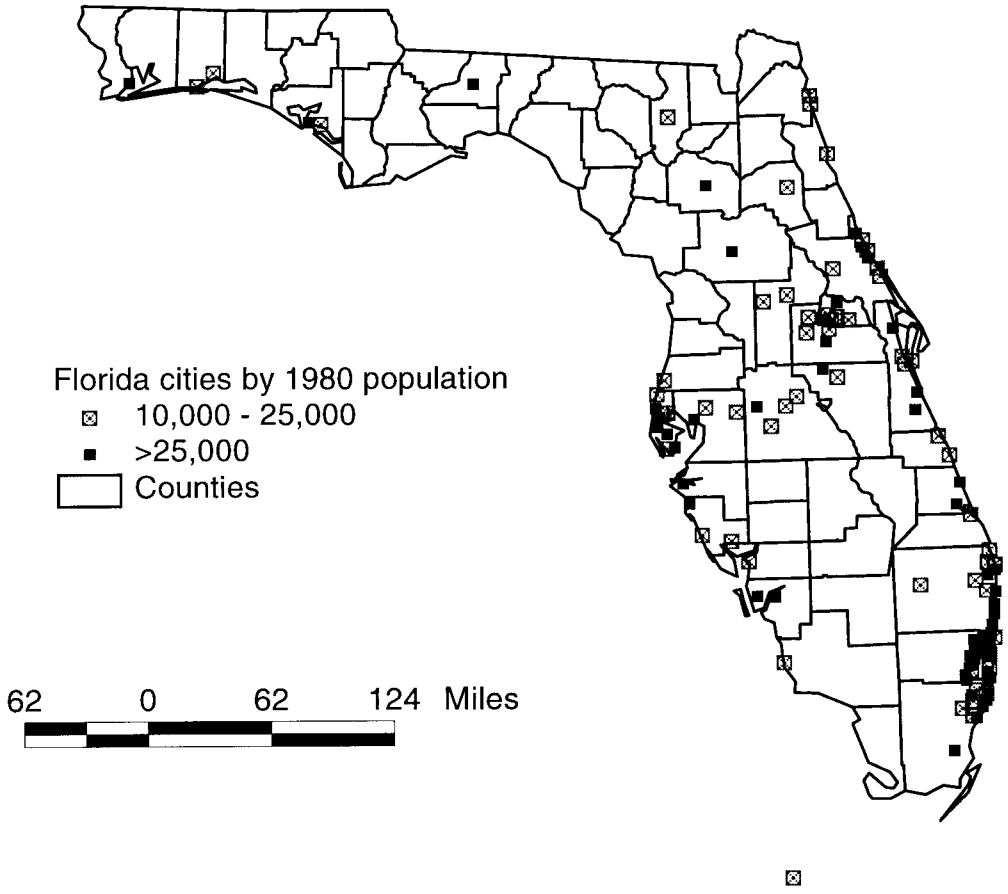
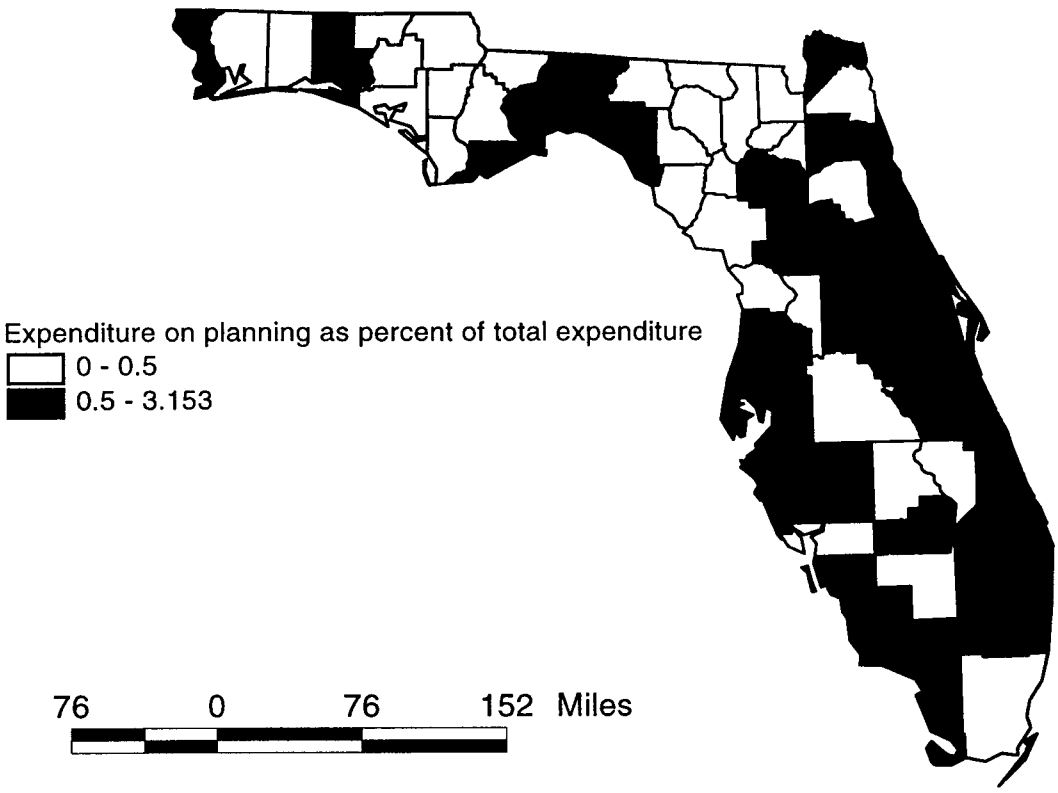


Figure 2: Florida Counties - 1980/85 Expenditure on Planning
(per capita vs. % of total)



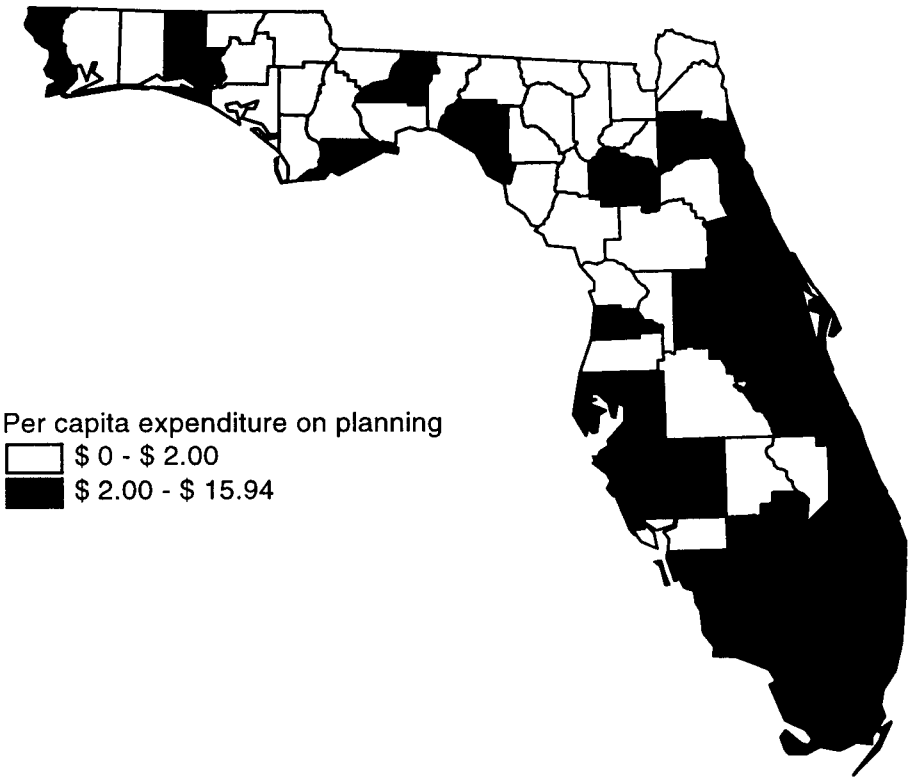
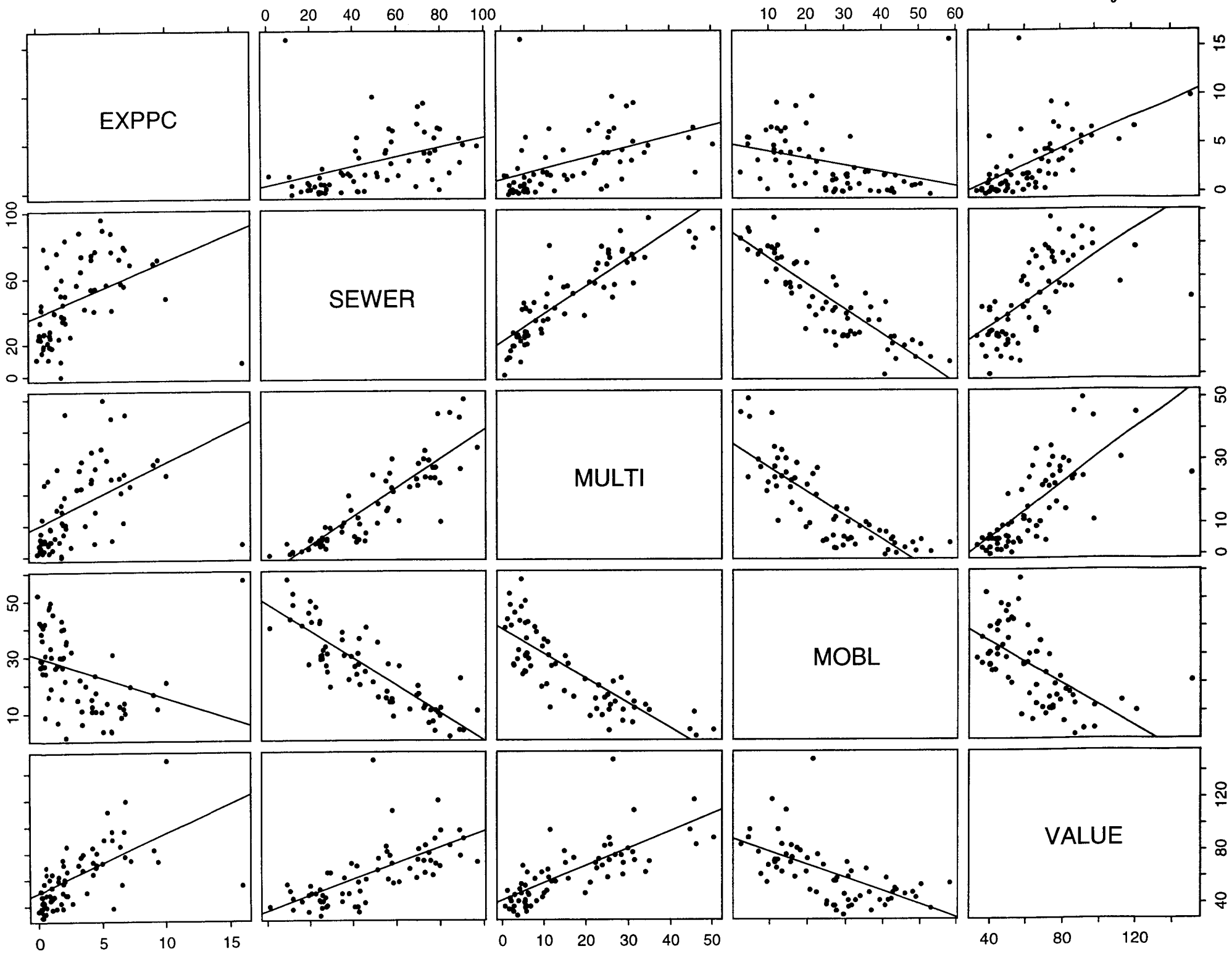


Figure 3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SEWER
MULTI
MOBL
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0 5 10 15
0 20 60 100
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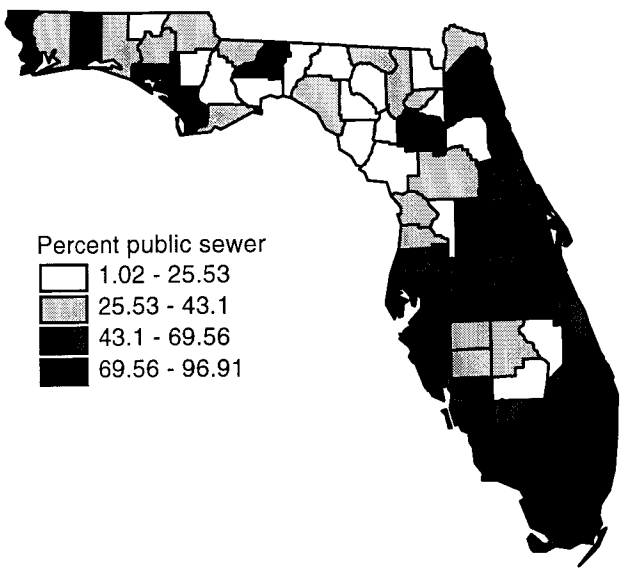
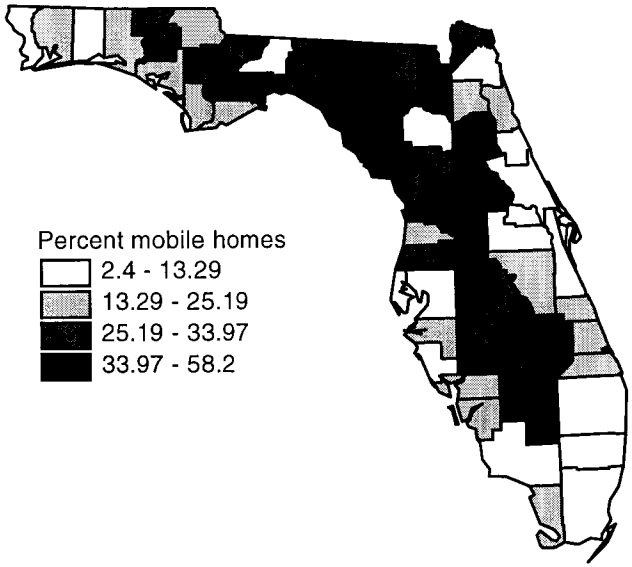
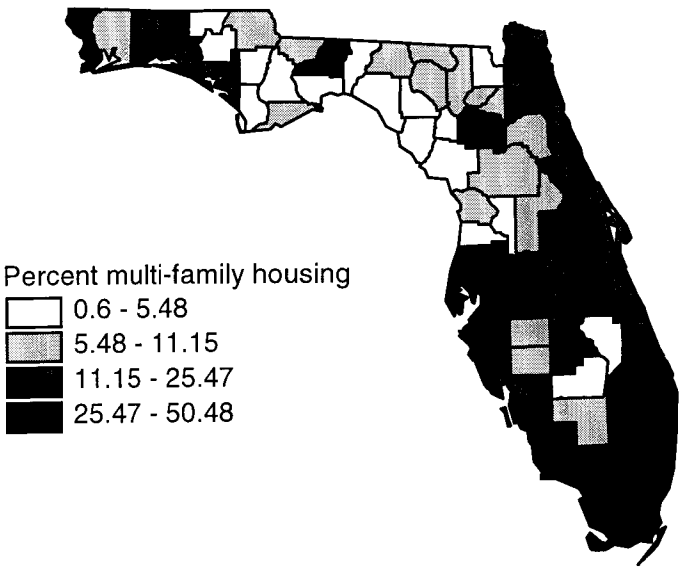
10 30 50
0 5 10 15
0 10 20 30 40 50
40 80 120

Figure 4: Selected county characteristics, 1990







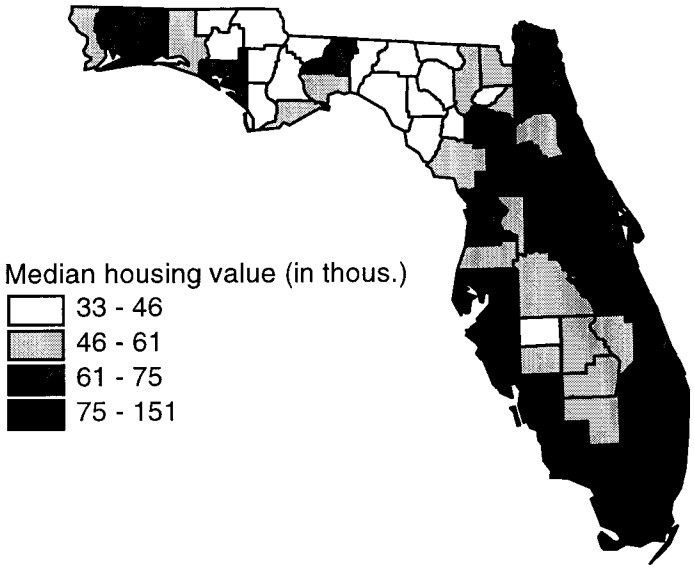
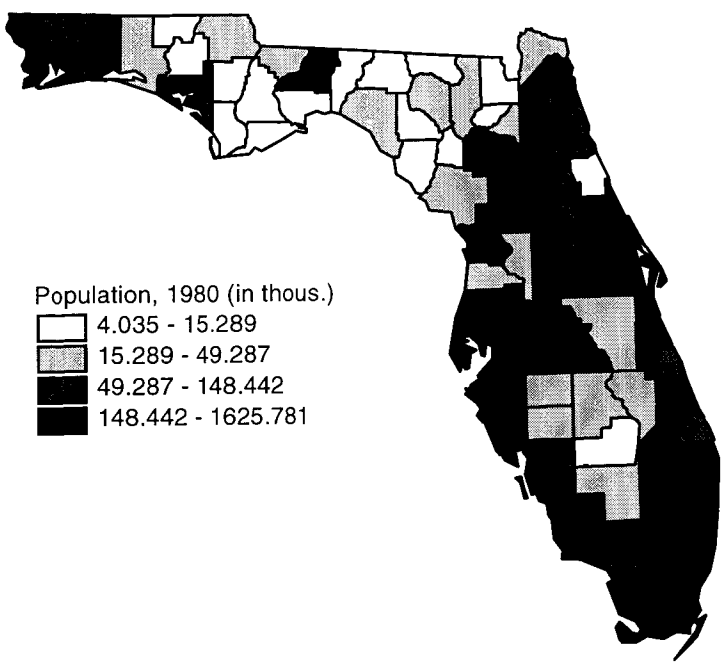
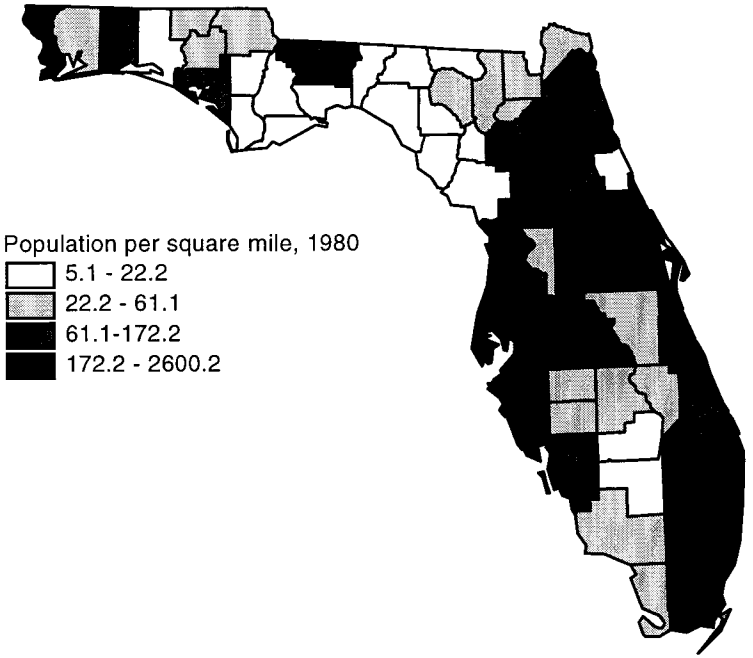
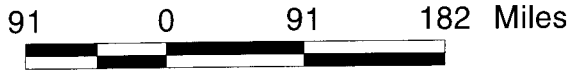


Figure 5: Comparison of county population, density and growth







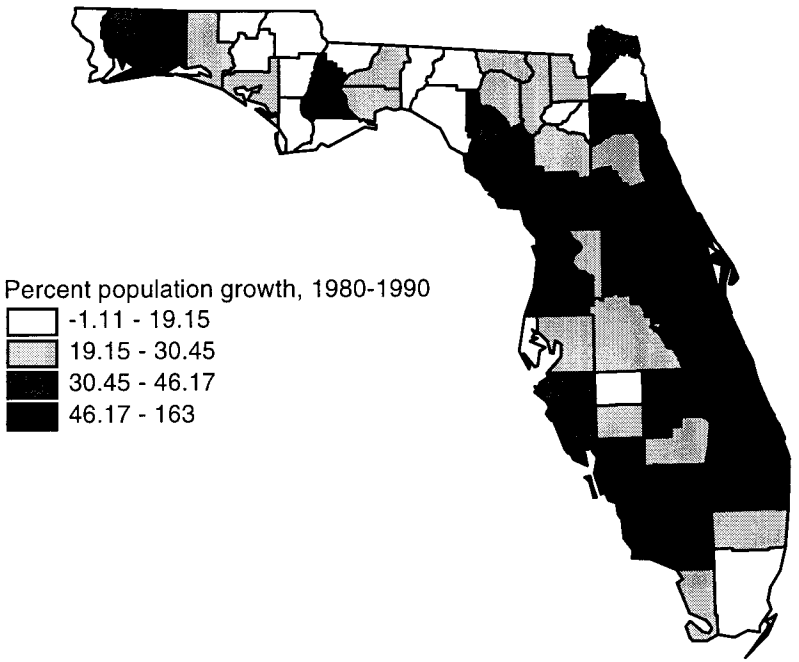


Figure 6

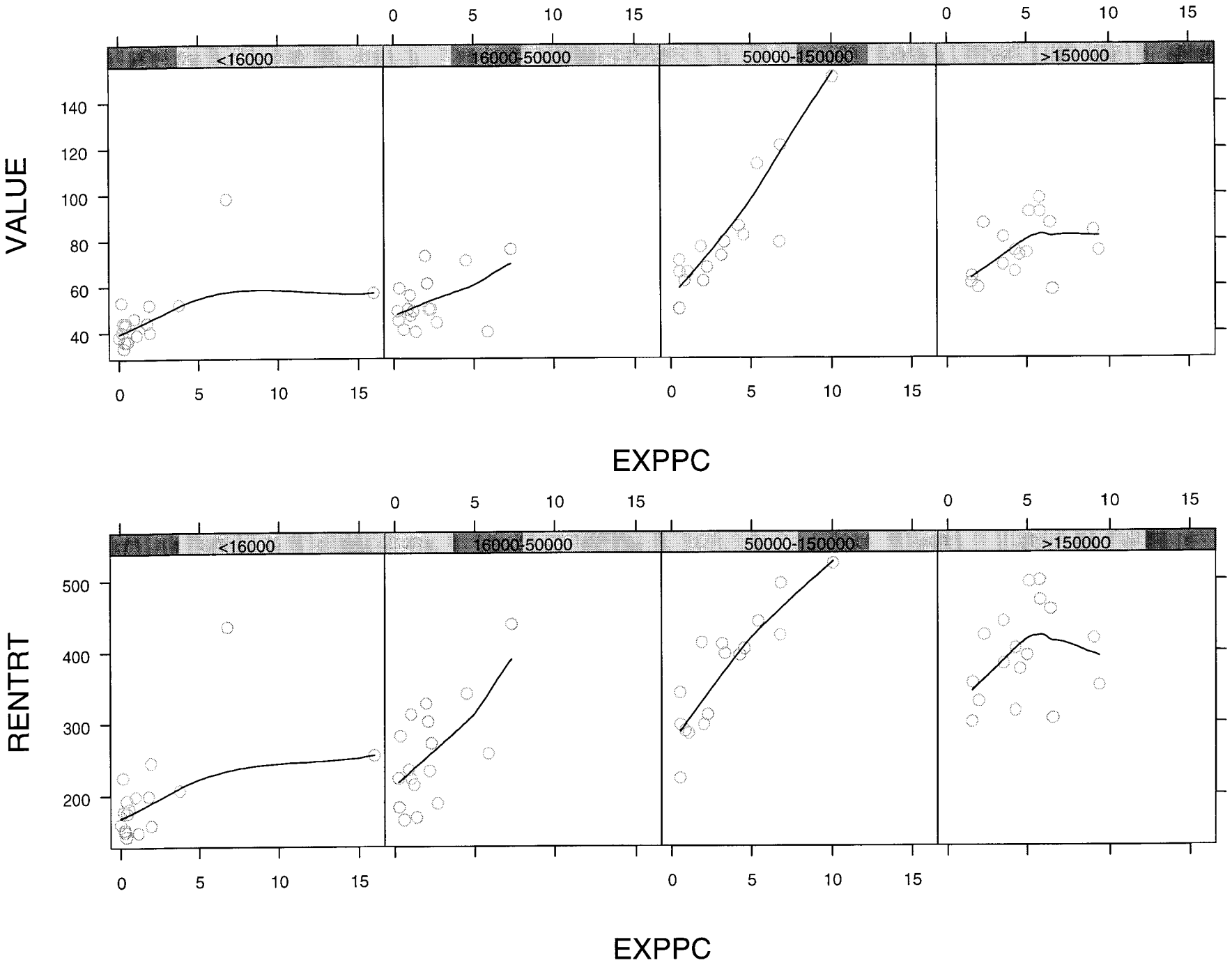

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Figure 7

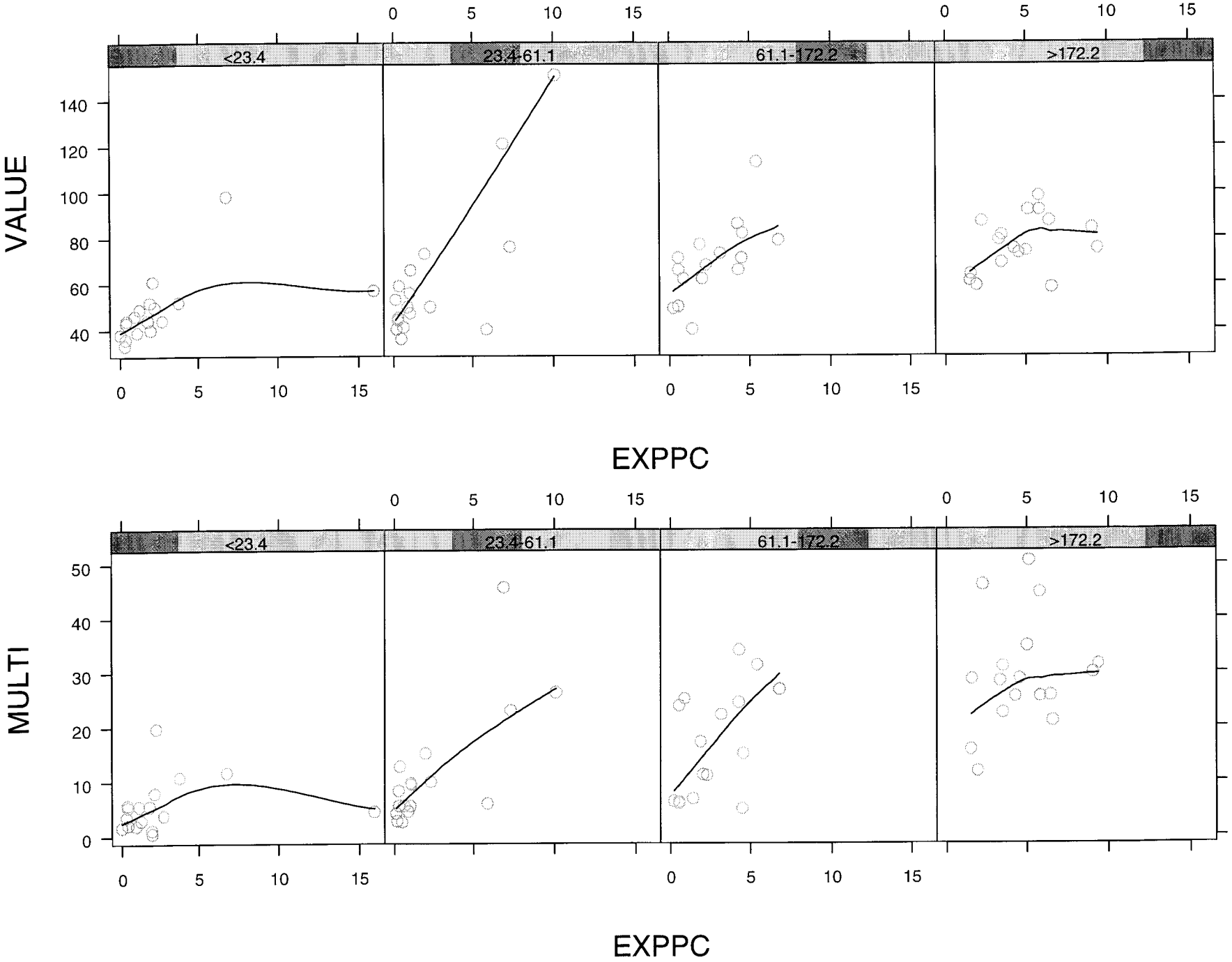
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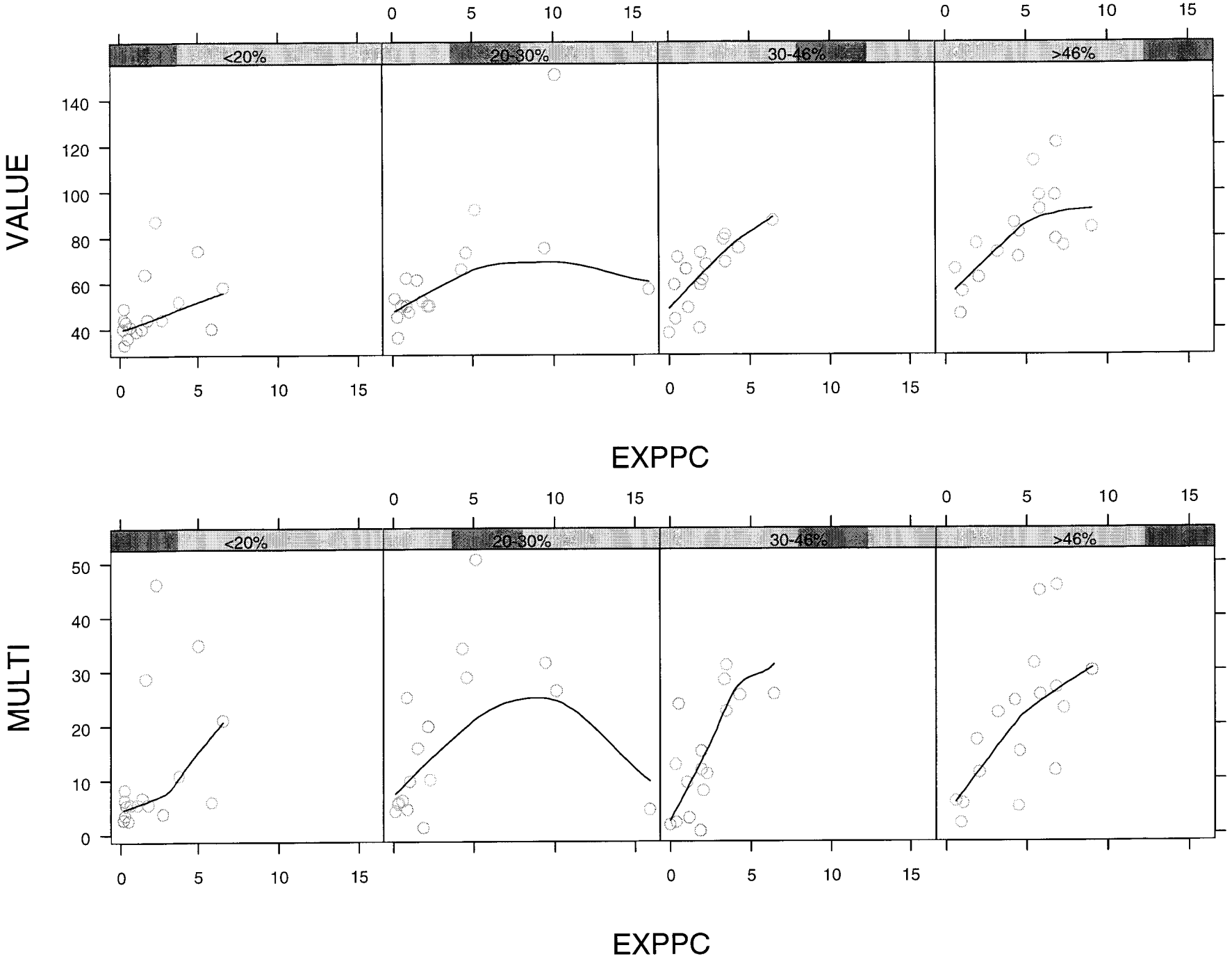
Figure 8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